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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/853,690	05/14/2001	Anthony Beverina	8594-002-64 DIV	7108

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EXAMINER	
FERRIS III, FRED O	

ART UNIT	PAPER NUMBER
2128	

DATE MAILED: 04/19/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/853,690	BEVERINA ET AL.	
	Examiner	Art Unit	
	Fred Ferris	2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 January 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13,14 and 42-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13,14 and 42-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 January 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-45 have been presented for examination based on applicant's amendment filed 23 January 2006. Applicants have now cancelled claims 1-12 and 15-41. Claims 13, 14, and 42-45 are currently pending in this application and remain rejected by the examiner.

Response to Arguments

2. Applicant's arguments filed 23 January 2006 have been fully considered.

Regarding applicant's response to drawing objections: The examiner withdraws the objection to the drawings in view of applicant's submission of replacement sheets for figures 32 and 53.

Regarding applicant's response to 101 rejection: The Examiner maintains that amended independent claim 13 remains abstract and does not recite a tangible result. The examiner submits that in order to establish a practical application, there must be either a physical transformation, or a useful, concrete and tangible result. Data transformation is not the same as a physical transformation. In this instance, there does not appear to be a tangible result that is based on the claimed calculations. Here, the claimed calculation of probability, vulnerability, susceptibility, and risk, are simply mathematical calculations and do not represent a physical transformation. In this case the calculations are merely a thought or computation, and not in and of themselves a tangible result. It is not until the calculations of probability, vulnerability, susceptibility, and risk (or artificial intelligence network) are applied in a meaningful way that they have

real world value and become a tangible result. (i.e. the claimed "calculated relative risk" is not ultimately used tangibly realize the method of "assessing the risk of a terrorist attack") Section 2106 [R-2] (Patentable Subject Matter — Computer-Related Inventions) of the MPEP recites the following:

"In practical terms, claims define nonstatutory processes if they:
– consist solely of mathematical operations without some claimed practical application (i.e., executing a "mathematical algorithm"); or
*– **simply manipulate abstract ideas**, e.g., a bid (Schrader, 22 F.3d at 293-94, 30 USPQ2d at 1458-59) or a bubble hierarchy (Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759), **without some claimed practical application**."*

The examiner therefore submits that claim 13 is simply drawn to the manipulation of abstract ideas since the claimed calculations of probability, vulnerability, susceptibility, and risk, are simply mathematical calculations that are not applied to achieve a resulting a practical application. (i.e. assessing the risk of a terrorist attack) MPEP 2106 further recites the following:

"A. Identify and Understand Any Practical Application Asserted for the Invention
*The claimed invention as a whole must accomplish a practical application. That is, it must produce a "useful, concrete and **tangible result**." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601-02. The purpose of this requirement is to limit patent protection to inventions that possess a certain level of **"real world" value**, as opposed to subject matter that represents nothing more than an idea or concept, or is simply a starting point for future investigation or research (Brenner v. Manson, 383 U.S. 519, 528-36, 148 USPQ 689, 693-96); In re Ziegler, 992, F.2d 1197, 1200-03, 26 USPQ2d 1600, 1603-06 (Fed. Cir. 1993)). Accordingly, a complete disclosure should contain some indication of the practical application for the claimed invention, i.e., why the applicant believes the claimed invention is useful.*
Apart from the utility requirement of 35 U.S.C. 101, usefulness under the patent eligibility standard requires significant functionality to be present to satisfy the useful result aspect of the practical application requirement. See Arrhythmia, 958 F.2d at 1057, 22 USPQ2d at 1036. Merely claiming nonfunctional descriptive material stored in a computer-readable medium does not make the invention eligible for patenting. For example, a claim directed to a word processing file stored on a disk may satisfy the utility requirement of 35 U.S.C. 101 since the information stored may have some "real world" value. However, the mere fact that the claim may satisfy the utility requirement of 35 U.S.C. 101 does not mean that a useful result is achieved under the practical application requirement. The claimed invention as a whole must produce a "useful, concrete and tangible" result to have a practical application.
Although the courts have yet to define the terms useful, concrete, and tangible in the

context of the practical application requirement for purposes of these guidelines, the following examples illustrate claimed inventions that have a practical application because they produce useful, concrete, and tangible result:
*- Claims drawn to a long-distance telephone billing process containing mathematical algorithms were held to be directed to patentable subject matter because "the claimed process applies the Boolean principle to produce a useful, concrete, **tangible result** without pre-empting other uses of the mathematical principle." AT &T Corp. v. Excel Communications, Inc., 172 F.3d 1352, 1358, 50 USPQ2d 1447, 1452 (Fed. Cir. 1999);*
- "[T]ransformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces a useful, concrete and tangible result' -- a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades." State Street, 149 F.3d at 1373, 47 USPQ2d at 1601; and
*- Claims drawn to a rasterizer for converting discrete waveform data samples into anti-aliased pixel illumination intensity data to be displayed on a display means were held to be directed to patentable subject matter since the claims defined "a specific machine to produce a useful, concrete, and **tangible result**." In re Alappat, 33 F.3d 1526, 1544, 31 USPQ2d 1545, 1557 (Fed. Cir. 1994)."*

In this case, claim 13 does not recite a tangible result since the claimed calculating a relative risk, and related calculations, are not applied to achieve a resulting a practical application. (i.e. assessing the risk of a terrorist attack) Dependent claims 14, and 42-45 inherit the defects of the claims from which they depend. The examiner therefore maintains the 35 USC 101 rejection. (Note: the examiner assumes that applicant's arguments referencing claim 12 intended to mean claim 13 since the amendment of 23 January 2006 has cancelled claim 12)

Regarding applicant's response to 102 rejections: The examiner withdraws the 102 rejection in view of applicant's amendment to claim 13 and cancellation of claims 15-41.

Regarding applicant's response to 103 rejections: Applicants argue that claim 13 as currently amended requires calculation of an "accessibility determined from a model of the physical environment of the site" which is at risk and is therefore not rendered

obvious by the prior art. In response, the examiner first submits that Biswas clearly renders obvious the required techniques for assessing the risk of a hazardous event (such as a terrorist attack) based on probability and vulnerability as noted below under 103 rejections. Biswas further discloses using various simulation models (deep models and quantitative models, Sections 4, 5) as part of the risk assessment analysis. (also, a simulation by necessity includes a model since the definition of term "simulation" includes computer "modeling" of a physical process or system. See: "simulation" - Microsoft Computer Dictionary, 1997). IFPG teaches strategies for risk reduction through protection, planning, construction, and design of a physical site inclusive of vulnerability assessment (section C, page 9) and including the susceptibility to attack from a terrorist threat (section B, part 2, page 8). That is, the physical site "planning" techniques disclosed by IFPG, in combination with the simulation "model" disclosed by Biswas, renders obvious the amended limitations relating to calculating the consequence, susceptibility, and accessibility of a terrorist attack determined from a model of the physical environment. Further, a review of applicant's specification for guidance in defining the claimed modeling of the present invention reveals that the "model" appears to simply be the calculation of "simple damage to assets and human casualties". (page 27, line 8) In fact, the analytic models disclosed in Table A of applicant's specification appear to simply be existing third party software programs and hence would have been known to a skilled artisan at the time of the invention. (see: page 27) New 103(a) rejections have therefore been applied to claims 13, 14, and 42-45 based on this reasoning. Please see new 103(a) rejections below.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:
Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

3. Claims 13, 14, and 42-45 are rejected under 35 U.S.C. 101 because the claimed invention is drawn to non-statutory subject matter.

The Examiner submits that method of claim 13, as written, are merely drawn to a mental process for assessing the risk based on probability and vulnerability because the language of the claims can be interpreted as meaning that the method is carried out by a mental process augmented (calculated) using pencil and paper and are therefore abstract and do not recite a tangible result.

***MPEP 2111 [R-1]** recites the following:*

"2111 [R-1] Claim Interpretation; Broadest Reasonable Interpretation
CLAIMS MUST BE GIVEN THEIR BROADEST REASONABLE INTERPRETATION
*During patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000).< Applicant always has the opportunity to amend the claims during prosecution, and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified. In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969) (Claim 9 was directed to a process of analyzing data generated by mass spectrographic analysis of a gas. The process comprised selecting the data to be analyzed by subjecting the data to a mathematical manipulation. The examiner made rejections under **35 U.S.C. 101** and 102. In the 35 U.S.C. 102 rejection, the examiner explained that **the claim was anticipated by a mental process augmented by pencil and paper markings**. **The court agreed that the claim was not limited to using a machine to carry out the process since the claim did not explicitly set forth the machine**. The court explained that "reading a claim in light of the specification, to thereby interpret limitations explicitly recited in the claim, is a quite different thing from reading limitations of the specification into a claim,' to thereby narrow the scope of the claim by implicitly adding disclosed limitations which have no express basis in the claim." The court found that applicant was advocating the latter, i.e., the impermissible importation of subject matter from the specification into the claim.). See also In re Morris, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997) (The court held that the PTO is not required, in the course of prosecution, to interpret claims in applications in the same manner as a court would interpret claims in an infringement suit. Rather, the "PTO*

applies to verbiage of the proposed claims the broadest reasonable meaning of the words in their ordinary usage as they would be understood by one of ordinary skill in the art, taking into account whatever enlightenment by way of definitions or otherwise that may be afforded by the written description contained in applicant's specification.")"

Here, the claimed calculations of probability, vulnerability, susceptibility, and risk, are simply mathematical calculations.

Section 2106 [R-2] (Patentable Subject Matter — Computer-Related Inventions) of the MPEP recites the following:

"In practical terms, claims define nonstatutory processes if they:
– consist solely of mathematical operations without some claimed practical application (i.e., executing a "mathematical algorithm"); or
*– **simply manipulate abstract ideas**, e.g., a bid (Schrader, 22 F.3d at 293-94, 30 USPQ2d at 1458-59) or a bubble hierarchy (Warmerdam, 33 F.3d at 1360, 31 USPQ2d at 1759), **without some claimed practical application**."*

The Examiner further submits that, in view of the language of the claims, Applicant's have merely claimed a manipulation of abstract ideas since the calculation of probability, vulnerability, susceptibility, and risk, are simply mathematical calculations that do not recite a tangible result. Dependent claims 14, and 42-45 inherit the defects of the claims from which they depend.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 13, 14, and 42-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Applications of Quantitative Modeling to Knowledge-Based Risk Assessment Studies", Biswas et al, ACM 0-89791-320-5/89/0006/0092, ACM 1989 in view of "Installation Force Protection Guide", United States Air Force, 1997. (Hereafter, IFPG)

Regarding independent claim 13: Biswas et al first sets forth that it is well established that assessing risk based on the probability that an unwanted or hazardous event will occur (for (i) possible events) is given by the formula:

$$Risk = \sum_i (probability\ of\ event)_i\ X\ (consequence\ of\ event)_i$$

*Hence, Biswas et al clearly renders obvious the claimed limitations relating to assessing risk by calculating a probability that an event will occur. Applicant's specification (page 1, line 8) indicates that "Risk can be defined as probability*vulnerability" where vulnerability is simply the "susceptibility to the event multiplied by the consequences associated with that event". Biswas sets forth the*

consequences associated with an event as noted above. The specification further indicates that the calculation of susceptibility, and hence "vulnerability", is simply based on input from experts in the field (i.e. weighted based on expert knowledge). See specification, page 5, lines 14-21. That is, the "susceptibility" is simply based on the subjective judgements of human experts, and would therefore be obvious to a skilled artisan and in the well-known knowledge-based (expert) AI techniques as disclosed by Biswas in Section 4. (Also see: sections 2-5.3) Biswas et al therefore renders obvious the limitations relating to calculating risk based on probability and vulnerability, because these knowledge based AI techniques include calculating risk based on event probability, and consequences which would obviously include the "vulnerability" as assessed by experts in the field. (page 94, paragraphs 1-4, page 95, paragraphs 1-5, page 93, paragraphs 5-7, Fig. 1) Biswas el al further teaches the use of AI networks (i.e. event trees, nodes, layers) in calculating risk based on probability and vulnerability (inherent) as noted above. (Especially sections 5.0-5.3) Biswas further renders obvious the use of modeling and simulation in risk assessment. Specifically the incorporation and creation of models as part simulation of the risk assessment (section 5.1, page 95, para:3) of a physical process.

Biswas, however, does not explicitly disclose elements relating to accessibility in the event of a terrorist attack on the site (facility).

IFPG disclose strategies for risk reduction through protection, planning, construction, and design (i.e. accessibility) inclusive of vulnerability assessment (section C, page 9) that includes the susceptibility of a facility to attack from a terrorist threat

(section B, part 2, page 8). IFPG further discloses elements relating to infrastructure attack, military action, building security, susceptibility based on access to a facility and its related physical environment. (Chapters 3, 4)

It would have been obvious to one having ordinary skill in the art at the time the claimed invention was made to modify the teachings of Biswas relating to assessing risk based on probability and vulnerability by simulation and modeling, with the teachings of IFPG relating to strategies for protection, planning, construction, and design (i.e. accessibility) in reducing risk from a terrorist attack threat, to realize the elements of the claimed invention. An obvious motivation exists since the Biswas et al reference teaches that AI knowledge-based techniques can be applied to the risk analysis of any undesirable or hazardous event. (See: Biswas, Sections 1, 2). Further, the level of skill required by an artisan to realize the claimed limitations of the present invention is clearly established by both references. (See: Biswas/IFPG, Abstract) Accordingly, a skilled artisan tasked with realizing a method for calculating relative risk of an undesirable event based probability and vulnerability drawn to a terrorist threat, and having access to the teachings of Biswas and IFPG, would have knowingly modified the teachings of Biswas with the teachings of IFPG to realize the claimed elements of the present invention. It should also be noted that the Biswas teachings are drawn to the development of generic automated risk assessment tools for application in a variety of technological applications. (See: Section 5) Such applications can obviously be applied to risk assessment of terrorist attacks.

Per dependent claims 14: Biswas el al further teaches Bayesian networks (page 94, paragraph 7, Section 5.3), environmental risk (Section 2), and project risk (Sections 1-2). Biswas et al further renders obvious the limitations relating to vulnerability and susceptibility as noted above (sections 2-5.3).

Per claims 42-45: IFPG teaches strategies for risk reduction including the susceptibility to attack from a terrorist threat based on weapon and delivery system types (page 6-9, 40, chapter 2) on a target area (Biswas teaches hazards chosen by the user as noted above, page 94). Countermeasures (i.e. protection techniques) are also disclosed by Biswas for combating terrorist threats (page 10-12). The claimed "approach vectors" simply calculated based on terrain, site layout, and physical capabilities (specification page 23, line 6) and would have knowingly been incorporated by a skilled artisan using the same reasoning previously cited above. The examiner also notes that the claimed threat (approach) vectors as disclosed in applicants' specification appear to be generated via analytic model plug-ins to the VAT 200. (pages 24-28) As noted above the analytic models appear to realized via third party software (Table A) and would therefore have been known to a skilled artisan at the time of the invention.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, ***THIS ACTION IS MADE FINAL****. See MPEP*

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

"Blast Vulnerability of Building Structures and the Public from Terrorist Attack", Johnson et al, Proceedings of 1994 International Carnahan Conference on Security Technology", IEEE 1994 teaches building vulnerability and risk analysis.

"Air Force Instruction 31-210, Secretary of the Air Force, 1 August 1999 teaches Antiterrorism Protection program standards.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fred Ferris whose telephone number is 571-272-3778 and whose normal working hours are 8:30am to 5:00pm Monday to Friday. Any inquiry

of a general nature relating to the status of this application should be directed to the group receptionist whose telephone number is 571-272-3700. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jean Homere can be reached at 571-272-3780. The Official Fax Number is: (703) 872-9306

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